

REMARKS

Claims 1-27 are pending in the present application. Claims 1, 9, 16, 17, 22, 23, and 27 have been amended. Reconsideration and allowance of the claims is respectfully requested in view of the following remarks.

Applicants again note that an initialed copy of the Information Disclosure Statement submitted on July 9, 2002 has not been received. Applicants request that an initialed copy be returned with the response to this Amendment.

1. Claim Rejections Under 35 U.S.C. §112, second paragraph

Claims 23-27 stand rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to point out and distinctly claim the subject matter which the Applicants' regard as the invention. In particular the Examiner indicates that the word source appears intended for the word precursor. Applicants have amended the claims.

2. Claim Rejections Under 35 U.S.C. §103(a)

Claims 1, 2 and 4-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,651,950 to Lee et al. (hereinafter Lee '950) taken with U.S. Patent No. 5,030,286 to Crawford et al. (hereinafter Crawford). In responding to previous arguments the Examiner has indicated that if a cement contains at least two metals that the claims should reflect this. While the Applicants believe that this is a fact that one of ordinary skill in the art would already appreciate, the claims have been amended to more explicitly state this fact.

As previously discussed, Lee '950 does not teach a method of making a cermet, but rather a method of making silicon carbide. While silicon carbide can be part of a cermet, a cermet must have a ductile metal phase in addition to a hard ceramic phase such as a carbide. Crawford is directed to silica slurries and methods of making them. Crawford does not teach or suggest the production of a cermet. Further, the process described in Crawford is shear milling (Column 5, lines 57-60) and not the high energy ball milling as presently claimed.

Claim 1 is directed to a method for the synthesis of carbide cermet powders, not merely carbide powders. As is well-known to those of skill in the art, a cermet is a composite material made of a hard ceramic phase such as silicon carbide combined with a ductile metal such as cobalt that functions as a metal binder (see page 12, lines 3-20 of the Specification). Lee is directed to methods of making silicon carbide, not a carbide cermet and Crawford is directed to the production of silica slurries. Applicants submit that neither Lee nor Crawford discloses the production of a cermet and thus there is at least one element of the present claims that is not taught by the references. If one were to properly combine Lee and Crawford, one would obtain silicon carbide and not a cermet.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Establishing a *prima facie* case of obviousness requires that all elements of the invention be disclosed in the prior art. *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

Applicants assert that the Examiner has failed to establish a *prima facie* case of obviousness because neither Lee nor Crawford teaches a method of making a cermet. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 3 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lee taken with Crawford and further in view of U.S. Patent No. 4,742,029 to Kurachi et al. (hereinafter "Kurachi"). The combination of Lee and Crawford was discussed above. Kurachi has been cited for its teaching with regard to carbon sources and does not teach or suggest method of making a cermet. Because Kurachi does not teach methods of forming a cermet, Kurachi fails to cure the defects of Lee and Crawford. Reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are requested.

3. Claim Rejections Under 35 U.S.C. §102 (b) and (e)

Claims 1-5, 7-14, 16-21, and 23-26 stand rejected under 35 U.S.C. §102(e) as being anticipated by or, in the alternative under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 5,746,803 to Dunmead et al. (hereinafter "Dunmead"). Applicants respectfully traverse the rejection. In making the rejection, the Examiner has stated "Dunmead teaches in column 7 and ex. 1 ball-milling carbon black and metal oxide" (Paper 12, Page 3). The Examiner further states "[w]hile not explicitly teaching 'high energy', the 50 rpm recited appears to be 'high'" (Paper 12, Page 3). In responding to arguments previously submitted the Examiner has stated that "the argument that the references do not teach 'high' energy is not persuasive" (Paper No. 20, page 3). Accordingly Applicants have amended the claims to specifically recite a milling speed greater than 300 rotations per minute (rpm). Applicants assert that one of ordinary skill in the art would readily appreciate that the milling speed of high energy milling would be greater than 300 rpm. In support of this assertion Applicants refer to U.S. Patent No. 5,773,922 to Lee et al., filed on Nov. 30, 1995 (Lee '922). A copy of U.S. Patent

No. 5,773,922 was previously provided. As described in Lee '922, high-energy ball milling is performed when "the ball mill is operated at a relatively higher rotating speed of 300-700 rpm" (Column 3, lines 22-26). It is noted that one of ordinary skill in the art would appreciate that high energy milling speeds in excess of 1000 rpm are also known.

In light of the amended claims, reconsideration and withdrawal of the rejections under 35 U.S.C. § 102(e) and 35 U.S.C. § 103(a) are requested.

Claims 1, 2, 4, 8-10, and 14 stand rejected under 35 U.S.C. § 102(e) as being anticipated, or in the alternative under 35 U.S.C. § 103(a) as obvious over by El-Eskandarandy et al., Metallurgical and Materials Transactions 27A, 4210, 1996 (hereinafter "El-Eskandarandy"). In responding to the arguments presented in the last amendment, the Examiner states "The El-Eskandarandy removes the Co does not detract from the fact that when it was present, the 'cermet' existed." (Paper 20, page 3). Applicants respectfully traverse the rejection.

El-Eskandarandy discloses a method of making tungsten carbide by solid-state high-energy ball milling  $WO_3$ , Mg and C powders (Page 4210, Column 2). El-Eskandarandy does not discuss nor employ Co as asserted by the Examiner. The Mg functions as a reducing agent in the production of tungsten carbide and is converted to  $MgO_2$  which is leached out during the process to leave the desired tungsten carbide (Page 4211, Column 1, lines 6-15). Thus at best El-Eskandarandy forms a composite WC/ $MgO_2$  particle (page 4212, column 2) which is not a cermet.

As discussed in detail above, Claim 1 is directed to a method of making a carbide cermet powder. Similarly, Claim 9 is also directed to a method of making a carbide cermet

powder. Also as discussed above, to anticipate a claim, a reference must have all of the elements arranged as in the claim. Because El-Eskandarany teaches at best a method of forming a composite WC/MgO<sub>2</sub> particle and not a cermnet, El-Eskandarany does not teach the method of Claims 1, 2, 4, 8-10, and 14. For at least the foregoing reasons, reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(e) are requested.

Claims 1-5, 7-14, and 23-25 stand rejected under 35 U.S.C. §102(b) as being anticipated, or in the alternative under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 3,865,586 to Volin et al. In particular the Examiner has pointed to Examples 4 and 5 as grinding carbon and metal powders at 350 rpm followed by sintering. Applicants respectfully point out that the instant claims differ from the method of Volin in that the instant claims employ a metal oxide precursor in the formation of the cermnet while Volin teaches exclusively the use of metals or already formed metal alloys and does not teach or suggest the use of a precursor as is instantly claimed. Thus Volin does not provide adequate basis for a rejection based on 35 U.S.C. §102(b) or 35 U.S.C. §103(a) because Volin does not recite all elements of the pending claims.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130 maintained by the Applicants' Attorney.

Respectfully submitted,

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